

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
4 November 2004 (04.11.2004)

PCT

(10) International Publication Number  
**WO 2004/095589 A2**

(51) International Patent Classification<sup>7</sup>: **H01L 31/02**,  
31/042

(21) International Application Number:  
PCT/US2004/011525

(22) International Filing Date: 15 April 2004 (15.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/463,359 16 April 2003 (16.04.2003) US

(71) Applicant (for all designated States except US): **BP CORPORATION NORTH AMERICA INC.** [US/US]; 4101 Winfield Road, Warrenville, IL 60555 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **WARFIELD, Donald, B.** [US/US]; 16531 A.E. Mullinix Road, Woodbine, MD 27197 (US). **GARVISON, Paul** [US/US]; 335 East Third Street, Frederick, MD 21701 (US). **AMIN, Dinesh, S.** [US/US]; 22705 Timber Creek Lane, Clarksburg, MD 20871 (US).

(74) Agent: **NEMO, Thomas, E.**; BP America Inc., BP Legal, 4101 Winfield Road, Mail Code 5 East, Warrenville, IL 60555 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

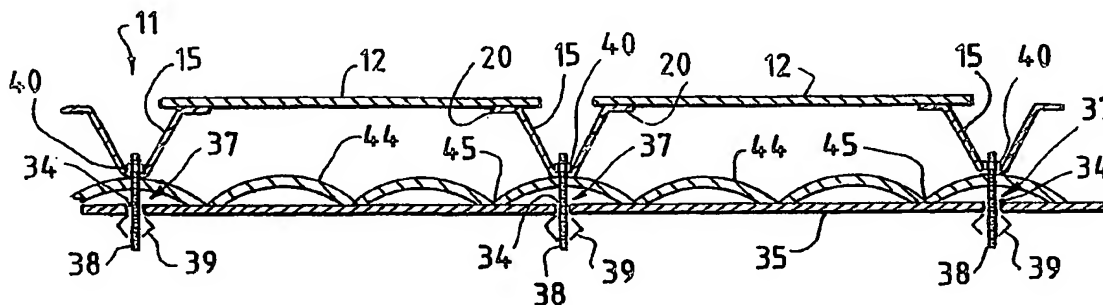
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

[Continued on next page]

(54) Title: **INSTALLING A SOLAR PANEL ON A ROOF**



(57) Abstract: A method and apparatus for installing a solar array on the roof of a residence or the like which uses a pan in the installation of the solar modules that make up the array. The pan may also be used as part of the packaging of the solar modules. The pan is comprised of a length of material having a trough-like cross-section. For packaging, shipping inserts are fitted into the trough of each pan. Opposite edges of a solar module are fitted into respective slots in the inserts of two facing pans and a protector is fitted over each end thereof to form a package for shipping. Once on site, the packages are disassembled, the pans are mounted on the roof, and the modules are connected to the pans to form the array.



— *of inventorship (Rule 4.17(iv)) for US only*

**Published:**

— *without international search report and to be republished upon receipt of that report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*